

App. No. 10/608,725  
Amdt. Dated October 31, 2005  
Reply to Office Action of August 31, 2005  
Atty. Dkt. No. 9129-109

### REMARKS/ARGUMENTS

This reply is responsive to an Office Action dated August 31, 2005.  
Reconsideration and allowance of the application and presently pending claims 1-38 are respectfully requested.

#### Present Status of the Patent Application

Claims 1-38 remain pending in the present application. Claims 1-38 have been rejected. Claims 1, 25, and 37 have been amended.

#### Specification

The specification has been amended to provide the Serial No. on page 1. This change was provided in our response dated May 9, 2005, but is repeated here for the benefit of the Examiner.

#### Claim Rejections – 35 U.S.C. § 103

Claims 1-5, 9, 21-24, and 37 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hoenig (U.S. Patent No. 4,996,479) in view of Jonsen (U.S. Patent No. 5,036,279). Applicants respectfully traverse this rejection.

#### *Independent Claim 1*

Independent claim 1, as amended, is allowable for at least the reason that Hoenig and Jonsen do not disclose, teach, or suggest “a portable cart for moving along the ground” and “a SQUID dewar containing liquid helium mounted in an inverted manner on the cart.”

In this regard, the Examiner acknowledges that the Hoenig patent does not disclose a portable cart, but makes reference to the teaching of the Jonsen patent. The Office Action has cited col. 2, lines 20-26 and claim 1:

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In FIG. 1, a NMR/NQR spectrometer 10 which operates at liquid nitrogen temperatures is shown within the confines of a portable box 12 which also constitutes the faraday shielding on the spectrometer.

Inside the spectrometer 10, a liquid nitrogen cryogen container 14, a dc power supply 16 and a computer 18 are arranged interconnected with each other.

[col. 2, lines 20-26]

1. A spectrometer which operates at liquid nitrogen temperatures comprising:
  - a portable box constituting faraday shielding for said spectrometer;
  - a container to hold a liquid nitrogen cryogen, wherein said container is situated within the confines of said box; and
  - a high temperature direct current superconducting quantum interference device (SQUID) made from mixed oxides of Lanthanide, copper, and barium, wherein said SQUID is also situated within the confines of said box.

As can be verified from a review of these cited portions of Jonsen, the device operates at liquid nitrogen temperatures using a high temperature dc SQUID. The high temperature dc SQUIDs have a superconducting transition temperature of greater than 77 K allowing for the use of liquid nitrogen. Jonsen merely discloses the portability of liquid nitrogen cryostats. In contrast, claim 1 and the Hoenig patent disclose using liquid helium which allows cooling to near absolute zero.

Low temperature dc SQUIDs have a superconducting transition temperature of approximately 4 degrees K. Furthermore, the Jonsen patent states at col. 1, lines 27-36 the following:

The typical dc SQUID is a small device. However, conventional dc SQUID'S operate at liquid Helium temperatures (4.2 K). To construct a NMR or NQR Spectrometer requires a Helium cryostat in which to hold the SQUID and detection systems. In order to achieve adequate shielding and supply of liquid helium, this cryostat is quite large and **not portable**. Furthermore, to achieve further shielding from stray radio frequency fields, the SQUID detector has to be placed within a faraday cage.

[*Emphasis added.*]

Since Hoenig does not disclose a portable cart and Jonsen teaches away from the portability of liquid helium cryostats, the combination does not teach or suggest

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portable system utilizing liquid helium. Therefore, Hoenig and Jonsen do not disclose "a portable cart for moving along the ground" and "a SQUID dewar containing liquid helium mounted in an inverted manner on the cart."

In addition, independent claim 1, as amended, is further allowable for at least the reason that Hoenig and Jonsen do not disclose, teach, or suggest "a headrest assembly ... having a headrest with a honeycomb supporting structure ... [and] includes an array of magnetic sensors ... at least partially disposed within the honeycomb structure." Neither Hoenig nor Jonsen disclose a "honeycomb supporting structure." Even the Zanakis et al. patent (U.S. Patent No. 4,951,674), referenced in regard to claim 18, only discloses an open cell ferro-magnetic honeycomb 17 (Fig. 3) that acts as a shield between the sensors 14, not as a supporting structure. Therefore, none of the cited art disclose "a headrest assembly ... having a headrest with a honeycomb supporting structure ... [and] includes an array of magnetic sensors ... at least partially disposed within the honeycomb structure."

Accordingly, the rejection is deficient in these areas. Notwithstanding, the undersigned has reviewed the entirety of these references and has failed to identify any such teachings anywhere within these references. Accordingly, the Hoenig and Jonsen patents fail to teach or disclose the invention as defined by claim 1, and the rejection of claim 1 should be withdrawn.

*Independent Claim 37*

Independent claim 37, as amended, is allowable for at least the reason that Hoenig and Jonsen do not disclose, teach, or suggest "predicting the noise in the array of magnetic sensors using a plurality of reference sensors; and subtracting the predicted noise from the electrical activity to allow use in an unshielded room." None of the cited art discloses any method of using a magnetoencephalography system in an unshielded room. Accordingly, the Hoenig and Jonsen patents fail to

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teach or disclose the invention as defined by claim 37, and the rejection of claim 37 should be withdrawn.

Claims 1-9, 16, 17, 37, and 38 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hoenig in view of Dilorio et al. (U.S. Patent No. 5,442,289). Applicants respectfully traverse this rejection.

*Independent Claim 1*

Independent claim 1, as amended, is allowable for at least the reason that neither Hoenig nor Dilorio disclose, teach, or suggest "a portable cart for moving along the ground" and "a SQUID dewar containing liquid helium mounted in an inverted manner on the cart."

In this regard, the Examiner acknowledges that the Hoenig patent does not disclose a portable cart, but makes reference to the teaching of the Dilorio patent. The Office Action has cited col. 10, lines 8-18:

... The use of connector 56 between the tube 72 and the lead 58 allows the entire tube array 72, array of pickup coils 12, and first container 14 to be disconnected and replaced with another unit without bringing the detector 30 to ambient temperature, which was impossible with the apparatus illustrated in the '355 patent.

As can be verified by a review of this cited portion of Dilorio in view of FIG. 1, Dilorio discloses this connector for the portion of the device utilizing liquid nitrogen as opposed to liquid helium. The significance of this difference has been discussed above in reference to claim 1. Furthermore, Dilorio states at col. 9, lines 34-48:

... The important point is that, using the approach of the invention, the detector which may require an operational temperature near absolute zero, is physically separated from the pickup coils, which need only be operated in the superconducting state and not necessarily near absolute zero, and connected with a lead system that also need only be operated in the superconducting state and not necessarily near absolute zero. Using high temperature superconductors having superconducting transition temperatures above 77K, the structure used

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to maintain the pickup coil and the lead system at or below the superconducting temperature is much simpler and less bulky than the structure used to maintain the detector near absolute zero.

Dilorio does not disclose any portability for the portion of their device utilizing liquid helium as shown in FIG. 1. In fact, Dilorio appears to teach away from portability for any device utilizing liquid helium. Since Hoenig does not disclose a portable cart and Dilorio teaches away from the portability of liquid helium devices, the combination does not teach or suggest a portable system utilizing liquid helium. Therefore, Hoenig and Dilorio do not disclose "a portable cart for moving along the ground" and "a SQUID dewar containing liquid helium mounted in an inverted manner on the cart."

In addition, independent claim 1, as amended, is further allowable for at least the reason that Hoenig and Dilorio do not disclose, teach, or suggest "a headrest assembly ... having a headrest with a honeycomb supporting structure ... [and] includes an array of magnetic sensors ... at least partially disposed within the honeycomb structure." Neither Hoenig nor Dilorio disclose a "honeycomb supporting structure." Even the Zanakis et al. patent (U.S. Patent No. 4,951,674), referenced in regard to claim 18, only discloses an open cell ferro-magnetic honeycomb 17 (Fig. 3) that acts as a shield between the sensors 14, not as a supporting structure. Therefore, none of the cited art disclose "a headrest assembly ... having a headrest with a honeycomb supporting structure ... [and] includes an array of magnetic sensors ... at least partially disposed within the honeycomb structure."

Accordingly, the rejection is deficient in these areas. Notwithstanding, the undersigned has reviewed the entirety of these references and has failed to identify any such teachings anywhere within these references. Accordingly, the Hoenig and Dilorio patents fail to teach or disclose the invention as defined by claim 1, and the rejection of claim 1 should be withdrawn.

*Independent Claim 37*

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Independent claim 37, as amended, is allowable for at least the reason that Hoenig and Dilorio do not disclose, teach, or suggest "predicting the noise in the array of magnetic sensors using a plurality of reference sensors; and subtracting the predicted noise from the electrical activity to allow use in an unshielded room." None of the cited art discloses any method of using a magnetoencephalography system in an unshielded room. Accordingly, the Hoenig and Dilorio patents fail to teach or disclose the invention as defined by claim 37, and the rejection of claim 37 should be withdrawn.

Claims 10-15, 20, and 25-36 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hoenig in view of Dilorio et al. and further in view of Yokosawa et al. (U.S. Patent No. 5,166,614). Applicants respectfully traverse this rejection.

#### *Independent Claim 25*

Independent claim 25, as amended, is allowable for at least the reason that Hoenig, Dilorio, and Yokosawa do not disclose, teach, or suggest "an array of closely-spaced evenly-distributed cryocooled superconducting sensors ... cryocooled using liquid helium" and a "headrest ... having a honeycomb supporting structure in which the sensors are at least partially disposed" as described above regarding claim 1. The Yokosawa patent does not overcome these shortcomings. Accordingly, the Hoenig, Dilorio, and Yokosawa patents fail to teach or disclose the invention as defined by claim 25, and the rejection of claim 25 should be withdrawn.

#### *Dependent Claims*

Dependent claims 2-24, 26-36, and 38 are believed to be allowable for at least the reason that these claims depend from allowable independent claims 1, 25, and 37, respectively. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

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### CONCLUSION

The other cited art of record has been reviewed, and it is believed that the claims, as amended, patentably distinguish thereof.

In light of the foregoing amendments and for at least the reasons set forth above, Applicants respectfully submit that all objections and rejections have been traversed, rendered moot, and/or accommodated, and that now pending claims 1-38 as amended are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned at 619-231-3666.


Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,

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